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AUTHOR	Shiban, John R.
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ABSTRACT

System Development Corporation conducted an extensive project of conceptualization and planning of models for compensatory educational intervention for older disadvantaged youth, at the secondary and postsecondary levels. Two intervention strategies were developed, and this report details the development of a field implementation plan for a longitudinal study to follow the intervention strategies at work. The field implementation plan was designed as a randomized experiment. (Author/MSE)

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System Development Corporation

ED154673

PLANNED VARIATIONS STUDY

FIELD IMPLEMENTATION PLAN FOR A FIELD RANDOMIZED EXPERIMENT

VOLUME IV

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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John R. Shiban

Studies and Evaluation Department
System Development Corporation

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INTRODUCTION

During the period of September 1, 1976, through January 30, 1978, System Development Corporation (SDC) conducted an extensive planning effort under a contract with the U.S. Office of Education (USOE). Called the Planned Variations Study, a major dimension of the project involved the conceptualization and planning of models for compensatory educational intervention at the secondary and postsecondary levels. The project also included the planning of a longitudinal evaluation of the models, incorporating the design of an evaluation and analytic procedures to be used, the methodology for executing an evaluation study in a variety of field settings, and the selection of appropriate instrumentation to determine the effects of models on participating students.

The genesis for the Planned Variations Study arose from earlier evaluations of two programs operated by the Bureau of Higher and Continuing Education (BHCE), the Upward Bound program for secondary students and the Special Services program for postsecondary students. Based on the results of these earlier evaluations, which had indicated that both Upward Bound and Special Services were achieving certain of their objectives but could benefit from the development of alternative models, the Office of Planning, Budgeting and Evaluation (OPBE) contracted with SDC to carry out the planning activities outlined above.

In the 17 months of the Planned Variations Study, SDC performed the following tasks, each of which is described in a separate report:

- Developed two intervention strategies for compensatory education projects to meet the unique needs of disadvantaged secondary and postsecondary students.
- Developed the design of a longitudinal study to evaluate the effects of models growing out of the two intervention strategies, along with analytic procedures to answer the issues to be addressed in such a study.
- Developed a field implementation plan for a longitudinal study, by which intervention models could be implemented in a variety of settings and data collected as called for in a longitudinal study design.

- Developed a set of recommendations for instruments to measure student outcomes in a longitudinal evaluation, based on an analysis of available measures in the cognitive and affective domains.
- Developed an index of components of existing projects and a system for regularly adding to and maintaining the index.

Since the study was both developmental and evaluative, it provided unique considerations for the design of the Field Implementation Plan (FIP). This report describes the FIP itself, the systems approach used in designing it, and the experiences derived from defining and/or solving the major problems that resulted from these study complexities. The objective for this report was to provide evaluators, designers, and researchers with insights and guidelines for planning and designing implementation plans for similar experiments.

With this objective in mind, this report attempts to describe the requirements and components of the Field Implementation Plan generically as part of a field randomized experiment, as well as in the context of the Planned Variations Study. While total generalizations were not possible, this frame of mind does provide enough distance to show the applicability of the FIP and its components to other similar experiments.

The Field Implementation Plan was designed specifically for the Planned Variations Study. The experimental design for that study is summarized below in order to provide the necessary context for the chapters that follow.

EXPERIMENTAL DESIGN

For purposes of this plan, the field randomized experiment was the postsecondary design of the Planned Variations Study as conceptualized during the design phase of the contract. Highlights of experimental design that apply to the Field Implementation Plan are described below.

At the postsecondary level, two Intervention Programs for disadvantaged students were to be developed from the general intervention strategy designed by SDC during Phase I. Each of these Intervention Programs was intended to fulfill all of the educational objectives required by the regulations for Special Services for Disadvantaged Students (SSDS). Over and above these considerations, the programs were to explore two specific cost-effectiveness issues:

1. Peer vs. Professional Counseling
2. Drop-in vs. Assigned Services

The first of these issues was to be contained in both programs; that is, each program was to provide for both peer counseling and professional counseling, and treatment students were to be assigned randomly to one or the other condition. The second issue, Drop-in vs. Assigned, was to provide the major difference between the programs; that is, one Intervention Program was to be designed exclusively for drop-in services, while the other would provide its services on an assigned basis only.

The field test was designed using a blocks-by-treatment approach. The treatments for the postsecondary design were the two intervention programs, the drop-in and assigned programs described above. The blocking variables were designated as two and four year colleges.

Two phases were planned for the field test. The Formative Evaluation encompassed one year during which the Intervention Programs were to be refined under actual operating conditions. The Summative Evaluation was planned for a two year period and was intended to evaluate the effectiveness and economy of the Intervention Programs.

During the formative period, one site per cell was planned; that is, four institutions would participate and would be distributed in the following way:

- 2-year college, drop-in
- 2-year college, assigned
- 4-year college, drop-in
- 4-year college, assigned

During the summative period, three sites per cell were planned. In order to compare the Intervention Programs with regular SSDS implementations, each block would also have three comparison sites with institutions implementing regular SSDS programs of their own creation. The summative design would then appear as illustrated in Figure 1.

This illustration also shows the internal design feature important to the experiment. In order to measure the effectiveness of the Intervention Programs, each site would contain treatment and control students. These students would be chosen as a single, eligible group and then randomly sorted into treatment and control groups. Only the treatment group would receive the interventions, while both groups would be tested.

In order that the nine treatment and comparison sites could be compared across each of the blocks, the design also specified essential characteristics or control variables by which successful applicants would be chosen. Table 1 presents a list of the control variables along with the dimension of control.

A new set of institutions would be selected for the formative and summative phases. The institutions would be chosen through a regular federally-sponsored competition characterized by proposals submitted in response to RFPs. The precise dimensions or ranges for the undetermined control variables would be derived from an analysis of a national survey undertaken as part of the FIP's awards process. The results of that survey analysis would become requirements in the RFPs distributed as part of the awards competition.

BLOCKS	INTERVENTION PROGRAMS		SSDS COMPARISON PROGRAMS
	DROP-IN	ASSIGNED	
2-YEAR COLLEGE	TREATMENT (1) / CONTROL	TREATMENT (2) / CONTROL	TREATMENT (3) / CONTROL
2-YEAR COLLEGE	TREATMENT (4) / CONTROL	TREATMENT (5) / CONTROL	TREATMENT (6) / CONTROL
2-YEAR COLLEGE	TREATMENT (7) / CONTROL	TREATMENT (8) / CONTROL	TREATMENT (9) / CONTROL
4-YEAR COLLEGE	TREATMENT (10) / CONTROL	TREATMENT (11) / CONTROL	TREATMENT (12) / CONTROL
4-YEAR COLLEGE	TREATMENT (13) / CONTROL	TREATMENT (14) / CONTROL	TREATMENT (15) / CONTROL
4-YEAR COLLEGE	TREATMENT (16) / CONTROL	TREATMENT (17) / CONTROL	TREATMENT (18) / CONTROL

Figure 1. Planned Variations Study - Summative Evaluation Design

Table 1. Planned Variations Study - Control Variables

CONTROL VARIABLE	DIMENSION
Proportion of Disadvantaged Students	To Be Determined
Number and Kinds of Remedial Programs	To Be Determined
Previous Experience with SSDS Programs	
Institution	NEW
Project Director	NEW
Size of Institution	To Be Determined
Selectivity of Institution	To Be Determined
Student Retention Rates	To Be Determined
Percent of Student Enrollment Below Poverty Criterion Level	To Be Determined
Public vs. Private Control	PUBLIC

REPORT FORMAT

This report has been formatted under three major topic headings:

- A plan for conducting a field randomized experiment in a postsecondary environment
- The systems approach used in designing the Field Implementation Plan for the Planned Variations Study
- Problems and solutions

A PLAN FOR CONDUCTING A FIELD RANDOMIZED EXPERIMENT IN A POSTSECONDARY ENVIRONMENT

The field test for this experiment seeks to achieve two major objectives: (1) improve student performance, and (2) evaluate the effectiveness, economy, and transportability of the Intervention Programs. The Field Implementation Plan must establish and maintain an environment within which both objectives can be achieved.

The duality of this environment is expressed in the two components of the Field Implementation Plan that operate during the field test. The Project Administration component serves the Project Director by providing comprehensive support for administrative records maintenance, procurement, budgeting and accounting, and communications. The Data Collection component serves the Study Staff by providing a comprehensive subsystem for collecting all data needed to evaluate the Intervention Programs.

The third component of the Field Implementation Plan occurs before the field test and is therefore described first. This component, Field Test Initiation, specifies the awards process by which appropriate institutions are selected for participation in the study; it prepares the Project Staffs at the selected institutions for implementing the programs; and it installs the Intervention Program at each institution. These three components of the Field Implementation Plan are described in the following sections.

FIELD TEST INITIATION COMPONENT

The activities and tasks associated with setting up and inaugurating the field experiment have many common attributes. They all occur prior to the field test itself, they are periodic and sequential, and they are interdependent. It is for these reasons that these activities and tasks have been integrated into one component of the Field Implementation Plan. The Field Test Initiation component involves three major activites:

- AWARDS PROCESS for selecting appropriate institutions as study participants.
- PROJECT STAFF PREPARATION for acquiring qualified project staffs, and for training those staffs in their program and administrative duties.
- PROGRAM INSTALLATION for ensuring full installation and inauguration of the Intervention Program.

Each of these activities is described in the sections that follow.

AWARDS PROCESS

The objective for the awards process is to select appropriate institutions as participants in the field experiment. Appropriateness in this context is determined in all of the following ways:

- That the institution fulfills all blocking and control requirements; and
- That the institution demonstrates its understanding of and ability to implement the Intervention Program; and
- That the institution is able to implement the Intervention Program within specific monetary guidelines.

It was decided that the awards process for the Planned Variations Study be accomplished as an open competition. Since it is necessary that all blocking and control variables be specified as discrete values or ranges of values in the Requests for Proposal (RFPs), it was found necessary to collect new information about postsecondary education (PSE) institutional and demographic characteristics through a national survey. An analysis of survey results would provide the parameters for all blocking and control variables.

The inclusion of the institutional survey into the awards process has resulted in two distinct, sequential tasks:

1. Survey of institutional characteristics
2. Awards competition

A description of each of these tasks follows.

TASK 1: Conduct a Survey of PSE Institutional and Demographic Characteristics

The USOE awards process has been designed to make use of regular federal procurement practices. This requires that the eligibility criteria be distinctly identified in each Request for Proposal (RFP), and that the selection process approve all proposals that meet those criteria up to the limit of participants required by the study design. The PVS study design has a number of blocking and control variables relating to institutional and demographic characteristics. These variables were listed in Table 1 in the previous section. In order for the study to have a selection of similar sites for each of its blocks, it will be necessary to derive precise dimensions for each of these variables. It was decided to conduct a survey of postsecondary institutions in order that a representative data base of institutional and demographic characteristics can be assembled. From this data base, eligibility criteria will be derived for inclusion in the RFPs to be distributed for the awards process. The following steps will be performed in conducting the survey.

Design Survey

The Study Staff will design the survey to accomplish the above objectives and submit it for review to USOE. The Study Staff will then produce a final design incorporating USOE's recommendations. The survey design will include the following major milestones.

1. Produce survey instrument
   - Develop survey instrument and instructions
   - Conduct a clinical pre-test of instrument
   - Prepare an OMB package
   - Submit the OMB package and provide technical assistance during review
   - Produce survey instrument

2. Distribute survey instrument

   - Prepare a representative list of institutions
   - Package and distribute survey instrument

3. Process survey data

   - Receive instruments, conduct follow-ups as required

4. Analyze survey data in relation to blocking and control variables

   - Provide refined eligibility criteria for inclusion into RFPs for the awards process

5. Publish report of survey findings

Produce Survey Instrument

The Study Staff will design a survey instrument to collect institutional and demographic characteristics that relate to the blocking and control variables of the PVS. The draft instrument will be submitted to USOE for review and concurrence.

A clinical pre-test of the survey instrument will be conducted to ensure that the survey items are unambiguous and will result in the collection of the desired information.

The survey design, the survey instrument, and the results of the clinical pre-test will then be incorporated into an OMB package and submitted for clearance. The Study Staff will provide technical assistance during the clearance process and incorporate any required modifications to the instrument and to the survey design.

Following OMB clearance, the survey instrument will be produced in sufficient quantities for distribution.

Distribute Survey Instrument

Concurrent with the above step, the Study Staff and USOE will prepare a representative list of institutions as potential participants in the survey. Following OMB clearance and instrument production, the survey instrument will be distributed to the list of institutions.

Process Survey Data

As instruments are completed and returned, the Study Staff will log in the returns and process the survey data by validating the responses and incorporating the data into a survey data base for subsequent analysis. The Study Staff will also follow up non-respondents and respondents with invalid and/or incomplete data.

Analyze Survey Data

After sufficient responses have been received and processed, the survey data base will be analyzed in terms of the blocking and control variables. The results of this analysis will be used to refine the eligibility criteria in the RFPs to be distributed during the awards process.

Publish Report of Survey Findings

The Study Staff will compile and publish a report of the survey process, analysis of data, and results as supportive evidence for the refined eligibility criteria used in the selection of study participants.

Estimated Schedule

The survey of institutional characteristics is estimated to take 19 months using the following calculations:

Table 2. Time Estimate for Survey of Institutional Characteristics

ACTIVITY	TIME
Design Survey	3 Months
Develop and Clear Survey Instrument	8 Months
Distribute Survey Instrument	1 Month
Process Survey Data	3 Months
Analyze Survey Data	2 Months
Publish Report of Survey Findings	2 Months
TOTAL TIME	19 Months

However, since certain steps overlap, the total linear time required to make available eligibility criteria for the RFPs has been estimated as 13 months.

TASK 2: Awards Competition

The objective for this task is the selection of appropriate institutions for the postsecondary study design. The following steps have been designed to accomplish this task for both the formative and summative phases of the field experiment.

1. Publish notification in the Federal Register and in the Commerce Business Daily.
2. Notify all potentially eligible institutions of the intention to let contracts for the Planned Variations Study.
3. Distribute the PSE Request for Proposal (RFP) to all institutions requesting to compete.
4. Evaluate proposals.
5. Select primary and secondary candidates for each cell of the PSE study design.
6. Negotiate with primary candidates.
7. Award contracts to selected institutions and announce awards.

Since this is a USOE-sponsored task, the plan and schedule for the above steps will be determined by USOE. The Study Staff will support the effort by producing draft RFPs and by assisting in the evaluation of proposals. The plan for such support is described below.

Support for Steps 1 and 3: Prepare Draft RFPs for the Postsecondary Intervention Models

The objective for the RFPs is to provide institutions with sufficient information about study requirements and intervention programs so that each can determine if it qualifies for the study, is interested in participating, and can produce a proposal demonstrating its understanding of the program and its capabilities for participating in it.

In order to achieve this objective, the Study Staff will prepare a draft RFP for each of the Intervention Programs containing detailed information pertaining to the following topics:

- Study Overview
- Institutional and Demographic Requirements
- Model Description
- Work Statement
- Evaluation Criteria

The Study Staff will submit the draft RFPs to USOE for review, after which final drafts will be prepared which incorporate USOE's recommendations. The final drafts will be delivered to USOE and will be integrated with USOE-produced sections that pertain to selection process, proposal format and delivery instructions, contractual terms and conditions, and awards competition schedule.

In addition to the above RFPs for the two Intervention Programs developed by the Study Staff, there will be a third RFP prepared for summative comparison sites only. This SSDS RFP will provide the study overview, demographic requirements, institutional and contractual terms and conditions, and competition schedule, but will then refer the candidate to the SSDS regulations for program requirements, selection criteria, proposal format and delivery instructions. In this way, proposals and subsequent projects implemented at comparison sites will be similar to other normally funded SSDS projects.

When all three RFPs have been completed, USOE will produce and distribute them to interested institutions on request.

Support for Step 2: Notify Potentially Eligible Institutions

Although USOE will publish announcements of the competition in both the Federal Register and the Commerce Business Daily, it was felt that a direct appeal to potentially eligible institutions will increase the number of respondents.

The Study Staff will therefore mail a USOE letter and a copy of CBD announcement to a list of institutions provided by USOE.

Support for Steps 4, 5, and 6: Provide Technical Assistance in Evaluating Proposals

The USOE awards process requires that each proposal submitted in response to the RFPs be read and evaluated by non-Federal as well as Federal readers. The Study Staff will support this effort by supplying project personnel as non-federal readers. These personnel will read and evaluate each of the proposals and participate in the evaluation panel that ranks each proposal for excellence and competence.

Product for Task 2: Awards Competition

This task was scheduled to be accomplished twice for the Planned Variations Study. For the Formative Evaluation, four institutions would have been chosen to participate for one year. For the Summative Evaluation, 18 institutions would have been chosen to participate for a two-year period.

PROJECT STAFF PREPARATION

This activity is composed of two tasks: project staff acquisition and project staff training.

Project Staff Acquisition

Following the contract awards, each Project Director will acquire his permanent staff in conformance with the requirements of the Intervention Program, his proposed staffing plan, and the mutual agreements that were approved during contract negotiations.

Project Staff Training

A two-week workshop will then be conducted to prepare each Project Staff to install and to implement its assigned Intervention Program within the study environment. The topics for the PVS Workshop are as follows:

- Introduction to the Planned Variations Study
- Intervention Program Objectives and Content
- Intervention Program Implementation Procedures
- Administrative Management Procedures
- Data Collection Procedures
- Master Schedule and Milestones
- Training Course(s) for Second-Level Staff
- Installation Procedures

The subject matter to be covered within the topics of this workshop will be derived from the Field Implementation Plan, the Intervention Programs, the Analysis Plan, and Instrumentation. Once integrated, the workshop will provide comprehensive instruction and exercises in applying all the major features and processes of the intervention program, as well as all administrative and data collection procedures with which the project staff will be concerned.

For the Planned Variations Study, this activity will be accomplished twice for treatment sites, once for the Formative Evaluation, and once for the Summative Evaluation. Comparison sites will receive regular SSDS support from USOE.

Since the objective of the Formative Evaluation is to refine Intervention Programs never before used at an operational site (although some components will have been used previously), it is essential that individual attention be paid to every activity at each of the formative sites. The workshop will therefore be implemented at each of the eight sites.

The Summative Evaluation, on the other hand, is intended to evaluate the Intervention Programs in as normal an environment as can be simulated without obstructing study objectives. The most recent inclination on the part of BHCE, the organization that will administer the Intervention Programs after they become operational, is that required training for these Intervention Programs would be undertaken at the USOE Training Institutes. To simulate this condition, the summative sites will be trained at four "regional" workshops, one for each treatment at the 2-year college level, and one for each treatment at the 4-year college level.

The experiences derived from these simulated regional workshops will be used to refine the Intervention Program workshops for final packaging.

PROGRAM INSTALLATION

Just prior to the beginning of the first year of the field test for both the Formative and Summative Evaluations, each participating institution will install its Intervention Program. Although the Project Director and his staff are responsible for installing the Intervention Program, the Study Staff will provide assistance and support by providing program and administrative materials, by assisting the Project Staff in identifying the treatment and control students, and by distributing general installation guidelines. This assistance will be provided only to the treatment sites in the Planned Variations Study; comparison sites will be provided assistance through USOE as would any regularly funded SSDS project.

Two types of installation assistance provided by the Study Staff are necessary to the conduct of the study. Delivery of program and administrative materials is necessary since the treatment sites are required to implement programs developed by the Study Staff. Treatment sites will have already been trained in the use of these materials. This task simulates what would normally be done after the field test by USOE through its Training Institutes. The second type of assistance, selection of treatment and control students, is a study requirement to ensure that each site is dealing with a non-biased, comparable sampling of students in its treatment and control groups. The Project Staff will secure and enroll the entire population of students needed to participate in the study. The Study Staff will then sort the students into the two groups by a method that is consistent with the study design.

In addition to the assistance provided in the above two specific cases, the study staff will distribute general installation guidelines that can be used by the Project Staff in preparing the Intervention Program for implementation. These general guidelines will cover the following topics:

- Establishing the site project office to ensure central control and project identity.
- Accepting delivery of program and administrative materials.

- Securing and enrolling students through advertisements, briefings, brochures, and interviews with faculty personnel and students.
- Installing the Project Administration component to provide the mechanism for administrative control, reporting, and materials maintenance.
- Procuring necessary facilities and equipment for inaugurating the project.
- Inaugurating the project with orientation sessions for faculty, project staff, treatment students, and control students.

The program installation activity will be accomplished twice during the field experiment, once for the Formative Evaluation and once for the Summative. The Study Staff will provide on-site assistance and support for program installation during the Formative Evaluation. During the Summative Evaluation, however, the Study Staff will provide such assistance and support from its central office in order to simulate the kind of interaction that would occur from the USOE Training Institutes after the study. The experiences derived from the "regional" assistance and support will be used to refine the program installation procedures for final packaging.

DATA COLLECTION COMPONENT

The Data Collection component of the Field Implementation Plan is responsible for collecting all the data necessary for analyzing and evaluating the Intervention Programs as implemented during the field experiment. The activities designed within this component represent much of the activity performed by the Study Staff during the field experiment. The following plan is a prototype of a comprehensive distribution, administration, and collection subsystem. The product of this subsystem is the data. The initial topic that describes this component therefore is the Data Categories. Techniques for collecting these data are then described. The final three elements of the Data Collection component are the Prototype Schedule for Data Collection, Data Collection Activities, and the Data Flow control concept.

These five elements of the Data Collection component are described in the sections that follow. These elements apply equally to treatment and comparison sites unless otherwise indicated.

DATA CATEGORIES

The student to which the Intervention Programs have been addressed is the focus of the data collection activities even though data will be acquired at three levels: student, project, institution. A comparison of data categories at these three levels illustrates this orientation for the Planned Variations Study. In the following three tables, the categories of data to be collected have been listed, along with the subjects of collection within each level, and the frequencies of collection. As the analysis system is specified and developed, these categories will be refined and specified. And as the instrumentation activity is accomplished, each of these categories will be represented by one or more instruments. The data categories now listed are for planning purposes and while some may be altered, the concepts represented here and in the following sections will remain valid with appropriate adjustments.

Table 3. PVS Field Implementation Plan - Student-Level Data Categories and Frequencies

CATEGORY	STUDENT GROUP		
	TREATMENT	COMPARISON	CONTROL
Achievement Data	Semi-Annual	Semi-Annual	Semi-Annual
Affective Data	Semi-Annual	Semi-Annual	Semi-Annual
Behavioral Data	Semi-Annual	Semi-Annual	Semi-Annual
Study Skills Data	Semi-Annual	Semi-Annual	Semi-Annual
Background and Descriptive Data	Annual	Annual	Annual
Remedial/Compensatory Descriptive Data	Semi-Annual	Semi-Annual	Semi-Annual
Remedial/Compensatory Exposure Data	Semi-Annual	Semi-Annual	Semi-Annual
Intervention Program Exposure Data	Monthly	Monthly	---
Intervention Program Performance Data	Semi-Annual	Semi-Annual	---
Academic Curriculum Performance Data	Annual	Annual	Annual
Opinion of Intervention Program	Annual	Annual	---

Table 4. PVS Field Implementation Plan - Project-Level Data Categories and Frequencies

CATEGORY	PROJECT AND PROJECT STAFF	
	TREATMENT	COMPARISON
Background and Descriptive Data	Annual	Annual
Intervention Program Descriptive Data	---	Annual
Opinion of Intervention Program	Annual	Annual
Project Status	Quarterly	---
Project Performance	Quarterly	---
Intervention Program Problems	Monthly (Formative Only)	---

Table 5. PVS Field Implementation Plan - Institution-Level Categories and Frequencies

CATEGORY	INSTITUTION		
	TREATMENT	COMPARISON	CONTROL
Background and Descriptive Data	Biennial	Biennial	Biennial
Remedial/Compensatory Descriptive Data	Annual	Annual	Annual
Opinion of Intervention Program	Annual	Annual	---

TECHNIQUES FOR COLLECTING DATA

Techniques for collecting data in each of the above categories depend primarily on the instruments to be used. Instruments being contemplated include tests, questionnaires, interview and observation protocols, milestone reviews, and status reports. The following techniques demonstrate the appropriate procedures for administering these kinds of instruments.

Classroom-Administered Tests--Data concerned with achievement, affective measures, behavioral measures, and study skills at the student level lend themselves to classroom-administered tests. Table 6 lists the materials and procedures essential to the collection of data in a test administration environment.

Table 6. Classroom Administration of Test Instruments

Agent: Study Staff

MATERIALS	PROCEDURES
• TESTING SCHEDULES • MATERIALS INVENTORY - Test Instruments - Data Packaging and Shipment Materials	• TESTING PROCEDURES - Scheduling - Rollcall - Distribution - Administration - Collection - Reconciliation - Make up Administration • DATA PACKAGING PROCEDURES • SHIPMENT PROCEDURES

Self-Administered Instruments--Background and descriptive data lend themselves to questionnaire and other self-administered instuments at all levels. Table 7 lists the materials and procedures essential to the collection of data through self-administered instruments.

Table 7. Self-Administered Instruments

Agent: Project Director

MATERIALS	PROCEDURES
• MATERIALS INVENTORY - Instruments - Instructions - Data Packaging and Shipment Materials	• DATA COLLECTION PROCEDURES - Rollcall - Orientation - Distribution - Collection - Reconciliation • DATA PACKAGING PROCEDURES • SHIPMENT PROCEDURES

Interview and Observation Protocols--Exposure and performance data often require such techniques as interviews with record keepers and observations of people engaging in project activities. Table 8 lists the materials and procedures essential to the collection of data by observing and interviewing people.

Table 8. Interview and Observation Protcols

Agent: Study Staff

MATERIALS	PROCEDURES
• MATERIALS INVENTORY - Protocol Instruments - Protocol Instructions - Data Packaging and Shipment Materials	• PROTOCOL PREPARATIONS - Status of Project (Either) - Activity to be Observed . Objective . Description (Or) - Person to be Interviewed . Position . Background (And) - Contribution to Data Analysis • PROTOCOL EXECUTION PROCEDURES • MAKE UP/FOLLOW UP SESSIONS • DATA PACKAGING PROCEDURES • SHIPMENT PROCEDURES

Milestone Reviews* and Status Reports--Techniques for collecting data relating to project status and performance require substantial interaction with the Project Director and his staff. For the Planned Variations Study, a status-and-plans review called the Milestone Review was devised as a technique for assessing the progress and integrity of project implementations. A milestone review would be scheduled to coincide with each significant achievement or milestone for an Intervention Program. The milestone review was devised as a two-session activity; the first session involves administrative matters during which the Project Director and the Study Staff could discuss sensitive issues relating to students, Project Staff, budgets, and institutional support. The second session involves both the Project Staff and the Study Staff and covers status and plans for both the project and for the study. Table 9 lists the agendas for both sessions of the milestone review.

Although the Study Staff could collect significant amounts of relevant data during the milestone review, a project status report submitted by the Project Director following each review has been designed into the process to formalize the status and plans report and to provide reinforcement to the Project Director. From a data collection viewpoint, this status report would also provide a valuable source for collecting data about topics that had been left as open items during the review.

*This technique is designed for use only at treatment sites.

Table 9. Milestone Review

SESSION NO. 1: ADMINISTRATIVE STATUS AND PLANS
Agent: Project Director
Attendees: Project Director, Study Staff

AGENDA

- PROJECT STAFF: Turnover, Effectiveness
- STUDENTS, TREATMENT AND CONTROL: Dropout Rate, Commitment
- BUDGET vs. COSTS
- EVALUATION OF SUPPORT
  - Institution Management
  - User Group
  - Study Staff
  - USOE
- RECOMMENDATIONS AND ACTION ITEMS

SESSION NO. 2: IMPLEMENTATION STATUS AND PLANS
Attendees: Project Staff, Study Staff

A. PROJECT STATUS AND PLANS Agent: Project Staff

AGENDA

- OVERVIEW OF PROGRESS TO DATE
- DESCRIPTION OF MILESTONE(S) ACHIEVED SINCE LAST REVIEW
- SELF-EVALUATION OF IMPLEMENTATION PROGRESS AND INTEGRITY
- DISCUSSION OF PROBLEMS AND SOLUTIONS
- DESCRIPTION OF AND CONCURRENCE ON NEXT MILESTONE(S)
- RECOMMENDATIONS AND ACTION ITEMS

B. STUDY STATUS AND PLANS Agent: Study Staff

AGENDA

- OVERVIEW OF DATA COLLECTIONS ACCOMPLISHED TO DATE
- DESCRIPTION OF DATA COLLECTIONS SINCE LAST REVIEW
- DISCUSSION OF PROBLEMS AND SOLUTIONS
- DESCRIPTION OF NEXT DATA COLLECTION TASK(S)
- RECOMMENDATIONS AND ACTION ITEMS

Formative Site Visits*--A final technique for collecting data is the Formative Site Visit. As the title implies, this technique is only employed during the formative evaluation. Its purposes are to collect data about problems resulting from the attempted implementation of an untried Intervention Program and to install refinements that have been developed as a result of an analysis of defined problems. Members of the Study Staff associated with the development of the Intervention Program and the Field Implementation System will make regular monthly visits during which interview and observation protocol techniques will be employed. The Study Staff will also be available for telephone and written communications so that problems detected by the Project Staff will receive prompt attention. Not all refinements resulting from this activity will be installed in the Formative project since it may be determined that it is too late or would be too disruptive to the project to do so. All refinements, however, will be integrated into the Intervention Program for use in the Summative Evaluation. In order to maintain a clear view of what is operating in each formative site and what is being prepared for the Summative experiment, configuration management procedures will be employed through which each project configuration will be maintained by the Study Staff, as well as an "in-process" summative version.

*This technique is designed for use only at treatment sites.

PROTOTYPE SCHEDULE FOR DATA COLLECTION

Actual schedules for data collection depend upon the numbers and kinds of instruments developed for each of the data categories, the techniques employed for administering the instruments, and the academic and project calendars at each of the project sites. For planning purposes however, prototype schedules at the data category level can be used as a basis for defining the major data collection activities. The following prototype schedule for student-level data collection illustrates the pattern necessitated by the analysis plan.

It became apparent from the schedule and the types of data to be collected that it would be most efficient for the Project Director to collect the monthly data involving the student's exposure to the Intervention Program. It would also be feasible for the Project Staff to distribute and collect background and descriptive questionnaires that are to be self-administered. All other categories will be administered by the Study Staff in that they involve testing, interviews, and observations.

Similar prototype schedules and assignments can be made for the project-level and institution-level data collection categories. The student-level prototype is sufficient for planning purposes since it involves the most comprehensive collection of data for the study.

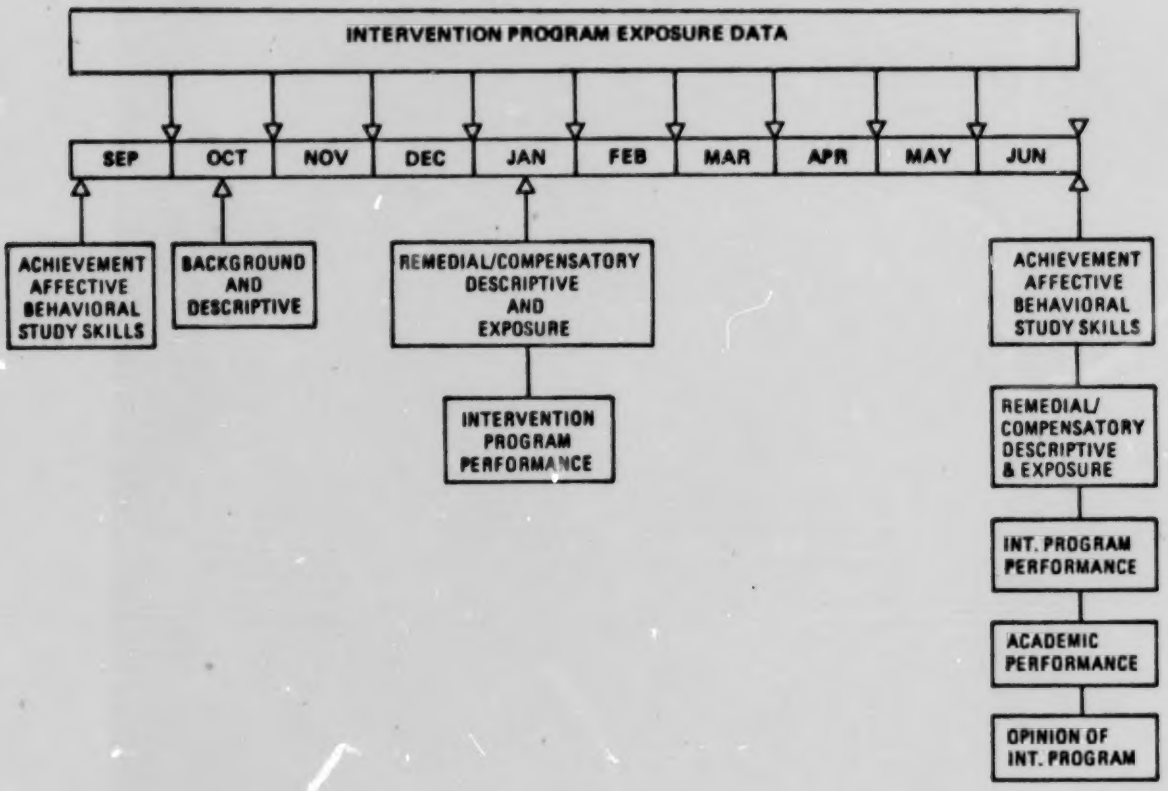


Figure 2. PVS Field Implementation Plan - Prototype Schedule: Student-Level Data Collection

DATA COLLECTION ACTIVITIES

There are seven activities involved with the collection of data for the study:

1. PRODUCTION generates sufficient materials including instruments for the study.
2. DISTRIBUTION labels, collates, and delivers all necessary materials to the administrator responsible for collecting the data.
3. ADMINISTRATION involves the actual collection of data (see techniques above).
4. COLLECTION returns the completed instruments to the Study Staff.
5. FOLLOW-UP involves tracing and reconciling missing instruments and data items.
6. CERTIFICATION is the process by which the Study Staff acknowledges receipt of a particular data category.

In order to achieve its objective, the Data Collection component must adhere to a disciplined and predictable control procedure. Therefore, all of the above activities are performed for the collection of each data category, even though some of the tasks contained within an activity may be unique depending upon the instruments and techniques used, and upon the identity of the administrator.

The prototype schedule for student-level data collection in effect maps the administration activity. All other activities either precede or follow. Viewed from the central office of the Study Staff, two of these other activities are critical to maintaining control of a field data collection operation. These two activities are the distribution of materials, and the collection of data. For this reason, the operation of the data collection function keys on these two activities.

DATA FLOW: D-CYCLE, C-CYCLE

The Distribution Cycle (D-cycle) encompasses the production and distribution of the quantities and types of materials necessary for collecting and returning data within a set and reasonable period of time. The D-cycle ends with a confirmation by the Administrator that all necessary materials have been inventoried and received.

The Collection Cycle (C-cycle) encompasses the administration of the instruments and their return to the Study Staff. The C-cycle is complete upon receipt of all used instruments.

Although follow-up and certification may take considerably longer for a data category, primary control of the data collection process is assured through these two cycles.

For planning and implementation, each D and C-cycle is defined and numbered. Production and distribution specifications, and distribution inventories are all referred to by the D-#. All return shipments, receipt control, and data processing directives are referred to by the C-#. This quality control procedure is used in all manuals and guidelines produced and distributed to study participants. It becomes the integrating concept for all data collection activities. The attached schematic illustrates the use of the cycle concept for student level data collections.

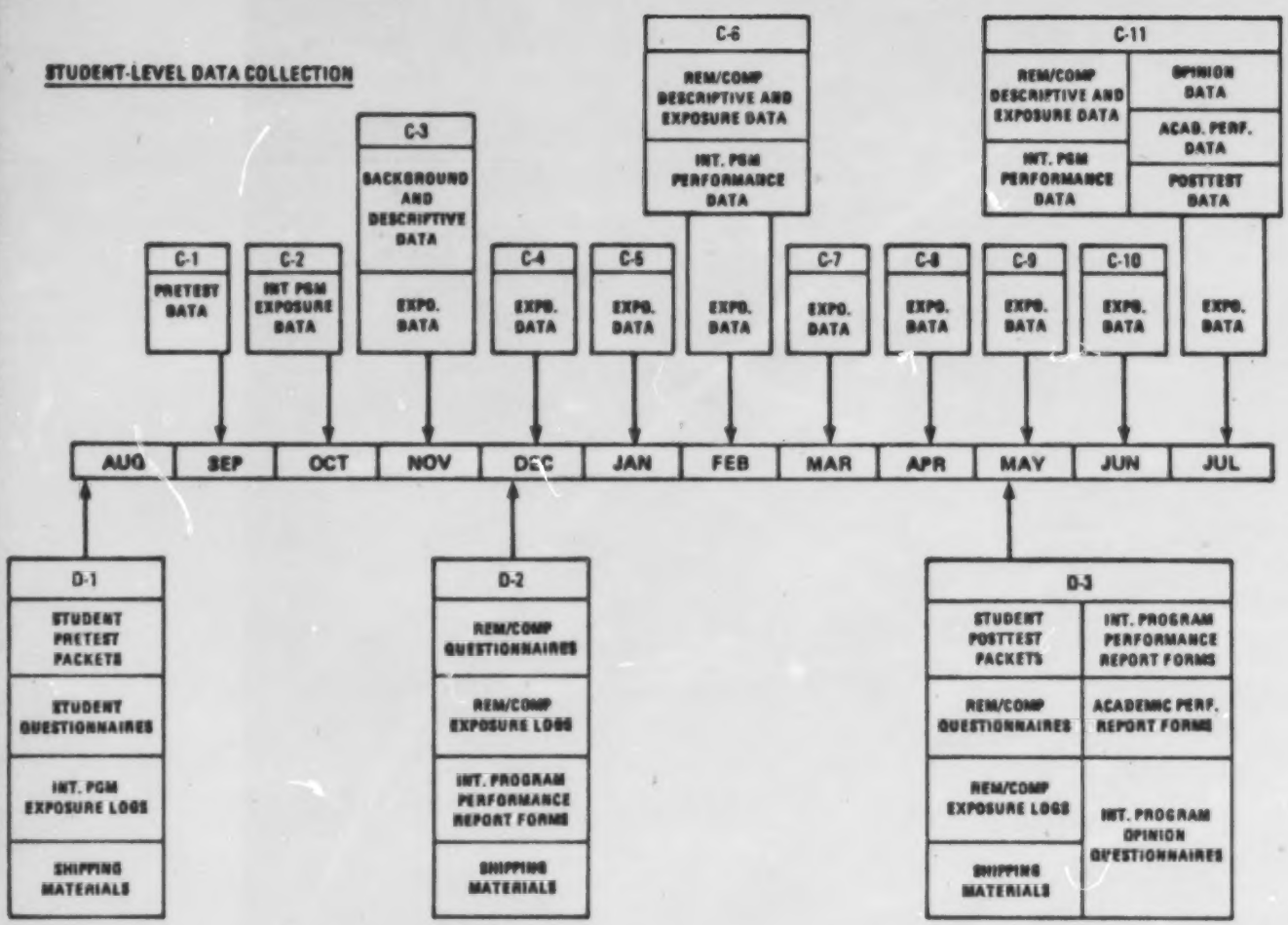


Figure 3. PVS Field Implementation Plan - Data Flow: D-cycle and C-cycle

The data flow exhibit correlates with the prototype schedule for student-level data collection. Distributions are grouped and scheduled so that they will be on hand and ready for instrument administration. The contents of a distribution cycle often are delivered to more than one administrator. Distribution inventories will stipulate the contents to be packaged and delivered by addressee; for instance, in D-1, Student Pretest Packets and shipping materials are delivered to a member of the Study Staff who is administering the tests, while the Student Questionnaires, Intervention Program Exposure Logs, and shipping materials are delivered to the Project Director. Regardless of who is to receive the materials, strict adherence to the distribution/receipt and collection/receipt procedures will be invoked to ensure that instruments and data are always under complete control. Contents of a C-cycle, such as C-11, will be batched and shipped as each unit is completed. The Remedial/Compensatory Questionnaires, for instance, may be completed in early June and forwarded to the Study Staff, while the Remedial/Compensatory Exposure Logs may not be completed until early July.

Instrument production and distribution activities will be planned and scheduled backwards from each D-cycle date, while activities dealing with completed instruments, such as receipt control, scanning, and data processing, will be planned and scheduled from each C-cycle date. Although many C-cycles overlap, strict identity control by cycle will be adhered to so that certification can be accomplished with confidence.

PROJECT ADMINISTRATION COMPONENT

Instructions and guidelines for managing the implementation of the academic interventions will be provided through the Project Management component of each Intervention Program. The Project Administration component of the Field Implementation Plan will be responsible for assisting the Project Director in fulfilling required administrative duties that support project maintenance and reporting. This component includes four activities:

- ADMINISTRATIVE MANAGEMENT PROCEDURES for maintaining project records, materials procurement, and budgeting and accounting.
- COMMUNICATIONS procedures to facilitate and regulate interactions among study participants.
- SEMINARS AND CONFERENCES for exchanging information about experiences in implementing the Intervention Programs.
- STUDY SUPPORT for facilitating the collection of study data.

Each of these activities is described in the sections that follow.

ADMINISTRATIVE MANAGEMENT PROCEDURES

The types and frequencies of administrative reporting that will be required by the Project Director during the implementation of the Intervention Program depends upon the contract or grant that binds the institution and USOE. However, such reporting depends upon accurate, current, and comprehensive record keeping. Furthermore, the smooth implementation of the project is in part a function of prompt and ready access to materials, equipment, supplies and other items required by the Intervention Program. The three tasks described here are intended to provide the Project Director with the procedures whereby reporting and project maintenance may be ensured. The three tasks are Administrative Records Maintenance, Procurement, and Budgeting and Accounting.

Administrative Records Maintenance

This task provides the procedures for keeping current and accurate records about students, project staff personnel, materials, and expendables. Specific entries involve the following events:

1. Student enrollment
2. Student participation
3. Staff employment
4. Staff participation
5. Inventory of materials, equipment, supplies
6. Diary of expendables including transportation, meals, facilities, events, other

Daily entries of events in these categories will provide a running summary of the status of the project's personnel and assets. At specific intervals, student and staff entries will be forwarded to Budgeting and Accounting for accounts payable action.

Procurement

This task provides the procedures for obtaining materials, supplies, and other items necessary for project implementation. The following major categories of items will be covered by the procurement procedures:

1. Program materials, equipment, supplies
2. Transportation
3. Meals
4. Lodging
5. Facilities
6. Cultural events
7. Other (Specify)

It should be noted that items procured from the Study Staff or from USOE, such as program materials, will be included in these procedures and will therefore be purchased and charged against the total budget for this project.

Procurements involving purchases, leases, and rents will produce associated entries to Administrative Records Maintenance and to the Accounting tasks. The Procurement task will be performed on an as-need basis.

Budgeting and Accounting

This task will provide the procedures required to pay the staff, students, and vendors, to collect receivables from USOE, and to maintain an accurate budget analysis and forecast.

Staff and student participation logs, and procurement expenditures will be used to calculate and disburse the following accounts payable distributions at regular intervals:

1. Staff payroll
2. Student incentives

3. Expenditures

   - Purchases
   - Leases
   - Rents

At those same intervals, an accounts receivable invoice will be prepared and submitted to USOE for reimbursement.

Finally, a budget analysis will be conducted to reconcile planned and actual expenses, to recalculate estimate-to-complete, and to determine expenditure modifications that will ensure budget integrity.

The results of this analysis will provide the Project Director with information by expense category so that he can modify planned program activities to coincide with available funds.

Implications for Data Collection

Although these tasks are intended primarily for project maintenance and reporting, the records that are accumulated through their operation will provide extensive data for the study analysis and evaluation. Even though this activity is not installed in the Comparison sites, regular SSDS requirements for record keeping, accounting, and budgeting should provide similar data.

COMMUNICATIONS

During the field experiment, it will be necessary for participating institutions to communicate with the Study Staff. It is also expected that institutions implementing the same Intervention Program will exchange information about the conduct of their projects. While it is important to facilitate these interactions, it is also necessary that these communications be regulated so that the experiment is conducted in a controlled environment. In order to promote interaction within prescribed limits, operational guidelines will be published along with a directory of study participants to provide a clear policy within which all study participants may effectively interact. The directory of study participants will provide the names, addresses, telephone numbers, and Intervention Programs being implemented for all participating institutions, as well as similar information for the Study Staff.

The operational guidelines will provide limitations of subject matter than can be discussed or written, and will set procedures for recording these interactions in a telephone log and letter file.

For the Planned Variations Study, interactive communications between the Study Staff and each participating institution will be more extensive during the Formative Evaluation than during the Summative Evaluation, since the former period has the objective of refining the Intervention Programs. During the Summative, however, all interactions will follow the operational guidelines as published.

An important adjunct to the communications activity will be the establishment of user groups. A user group is composed of those institutions implementing the same Intervention Program. During the Formative Evaluation for the Planned Variations Study, two institutions will belong to each of the two user groups. During the Summative Evaluation, six institutions will belong to each of the user groups. It is anticipated that members of a user group will naturally interact frequently. As a supplement to these informal interactions, the Study Staff will publish a quarterly newsletter including contributions from study participants.

Comparison sites will not be included in the communications activity, but will be free to interact with USOE and with other SSDS projects.

SEMINARS AND CONFERENCES

Important to the effective implementation of the Intervention Programs is the sharing of experience. In addition to the one-on-one written and phone communications described in the communications activity above, it is necessary that more structured media be used to ensure that a comprehensive exchange of information take place. Two different objectives derive from this need: Assistance in the on-going implementation is necessary primarily for the Project Directors to share problems, solutions and innovations; and insights, conclusions, and recommendations about the effectiveness of the Intervention Programs are necessary for refinements to be undertaken. These two objectives have been fulfilled through two different types of information exchanges. User group seminars have been designed as problem-solving sessions, and Project Directors' conferences as plenary sessions for insights, conclusions, and recommendations.

Seminars

The user group seminar will provide a formal extension of the user group activity described in the communications section. One of the members will host each of the user group seminars to be attended by the Project Directors and key staff members. Through a series of written and telephone contacts, the host institution will develop a working agenda and other arrangements for an estimated two-day seminar. The Study Staff will assist in the organization and scheduling of the seminars, but will attend as observers only. Discussions for the seminar will involve implementation status, successes, problems/solutions, failures, ideas and innovations, and action items for topics under the following categories:

1. Intervention Program experiences, by component and overall
2. Student relations with project and with institution
3. Relations between project and institution
4. Staff training and performance
5. Project management and administration

Comparison sites will not be involved in the user group seminars.

Conferences

The user group seminars are basically problem-solving sessions intended to provide Project Staff with assistance in their practical implementation problems. The broader questions dealing with the education of disadvantaged students through compensatory or remedial interventions are the purview of the Project Directors' conference designed to be convened at the end of each phase of the field experiment. In addition to the informal discussions among participants, each Project Director will be asked to present a paper concerning institutional reactions to the study, plans for the future with respect to continuation of the programs, and recommendations for possible improvements of those programs.

These conferences will also provide a public forum for the presentation of educational concepts and conclusions that have been derived from this experiment and from the Project Directors' previous and concurrent activity in this field.

With assistance from the Study Staff, USOE will host these three-day conferences and will publish the products as part of the documentation resulting from the field experiment.

Consideration should be given to extending invitations to the conference to Project Directors from the comparison sites. Their reactions to the study and to intervention methodologies could provide valuable contributions to the study's findings and recommendations.

Scheduling

During the formative year of the Planned Variations Study, a seminar for each user group will be held mid-year, and a Project Directors' conference at year's end. During the summative years, two seminars will be held in the first year, and one in mid-year of the second year. The Project Directors' conference for the Summative Evaluation will be held at the end of the second year.

STUDY SUPPORT

Although the primary activity for the Project Director and his staff is the implementation of the Intervention Program, their support of the collection of data for the field experiment will be required. This requirement applies to the Project Staffs at comparison sites as well as treatment sites. The study support activity will be a subset of the Data Collection component of the Field Implementation Plan, and will serve as an interface between the responsibilities of the Project Staff and the Study Staff. There are two types of tasks involved in this activity:

1. Access to personnel and records
2. Assistance in collecting data

Descriptions of the data categories and collection cycles requiring support and assistance are described in the Data Collection component. After instruments, procedures, and schedules for these cycles have been devised and developed for that component, they will be specified for the study support activity in a task-ordered guide for use by the Project Staffs. The Project Staff's duties in supporting the Planned Variations Study follows.

Access to Personnel and Records

The Project Director will provide access by the Study Staff to the Project Staff, to the participating students, and to project records. This access will be invaluable support for accomplishing milestone reviews, and formative site visits, and for collecting process, performance, and background data with interview and observation protocols.

Assistance in Collecting Data

The Project Staff will assist in collecting data by scheduling facilities for test administration, by assembling students for testing, and by proctoring test administration, when necessary. Project Staff will also be required to complete certain instruments such as Student Exposure Logs and Quarterly Status Reports. Finally, Project Staff will distribute and collect certain self-administered instruments to the staff, to the students, and perhaps to certain key institutional personnel.

FIELD IMPLEMENTATION PLAN SUMMARY

Although the Field Implementation Plan just described has been designed for the Planned Variations Study, its components, activities, and tasks have relevance to the conduct of similarly designed field experiments. Conceptually, each of the components satisfies specific and essential implementation requirements.

- Field Test Initiation selects and prepares the study participants.
- Project Administration preserves and maintains the experimental model.
- Data Collection measures and records the interactions between the participants and the model.

Additionally, these components are interdependent in that their designs have been integrated and made compatible at all significant levels. What has been taught in the Field Test Initiation component is measured in the Data Collection component; what has been installed is maintained through Project Administration.

The Field Implementation Plan described in this chapter is a blueprint for implementing the field experiment. In order to achieve the objectives for which this plan has been devised, it will be necessary to develop an integrated, operational Field Implementation System (FIS). The form of the implementation derives from its integrated plan; but the substance of the implementation derives from the other elements that are to be developed. The following table illustrates these essential relationships.

Table 10. FIP Dependencies

STUDY ELEMENT	CONTRIBUTES TO →	FIP COMPONENT/ ACTIVITY
Experiment Design	→	Awards Process
Intervention Program	→	Staff Preparation
Intervention Programs Experimental Design	→	Installation
Intervention Programs USOE Reporting Requirements	→	Project Administration
Analysis Plan Instrumentation	→	Data Collection

The systems approach from which these concepts derive is discussed in more detail in the following chapter.

THE SYSTEMS APPROACH USED IN DESIGNING THE FIP WORKPLAN

SYSTEMS APPROACH

The Systems Approach used in designing the Field Implementation Plan is a premeditated and disciplined process for constructing any complex product or system. Its essential orientation is toward user objectives; that is, it concentrates initially and continuously on defining and verifying the objectives the user intends to achieve. Three other attributes permeate this systems approach: interdependency of activities, organic development, and configuration management.

Interdependency of activities ensures the total integration and compatibility of activities since the output or interim product of one activity becomes the input to other activities. This lock-step approach, from objectives through installation, guarantees that the product or system will strive to achieve the initial objectives. It also allows for flexibility during development such that refinements in the initial objectives and/or the host environment can be integrated into the developmental process.

As it is used in this approach, organic development necessitates an even concentration on the whole product or system during each stage of development. In this way, the product or system begins its existence in toto very early in the developmental process. Sophistications upon the basic conceptual model impact all components during development, but the product or system can be implemented to achieve its basic objectives at many stages of development without sacrificing essential features. The key concept for success in organic development is the early delineation of essential features. This is accomplished by delineating a "critical path of usage", that basic set of processes and/or products that together achieve the user's basic objectives.

Configuration management is the attribute that facilitates modifications to the product or system. The configuration is the product or system as it exists during any stage of its developmental process. The lock-step approach to

development described earlier allows the developer to revert to a previous stage and reconstruct the product or system in response to a new or revised objective or requirement. The reconstructed product or system then becomes the new configuration.

To use a continuous process like the systems approach effectively, it is necessary to describe its operation in discrete phases. By doing so, development can be managed, resources efficiently allocated, and outputs quality controlled. Further, such discrete phases can be communicated among members of the development team, and to the user in the form of progress reports. The systems approach for development has been described and dissected in different ways. A component description that has been successfully used includes nine phases.

1. OBJECTIVES AND REQUIREMENTS collects and verifies the user's objectives and product or system requirements. A model is contructed of the environment in which the product or system is to be used. The primary output is a requirements specification.

2. SOLUTION innovates a feasible model of the product or system including its performance attributes. A conceptual model or system framework is the major output of this phase.

3. DESIGN translates the conceptual model of the solution into component specifications that are definitive blueprints for development.

4. DEVELOPMENT constructs and tests the components individually. This phase is characterized as the major decision point from concept to reality. A build/buy/modify decision is made for each component during which it is determined through trade off analyses that it is most feasible to build the component, or to buy it from an external source, or to modify an existing product. Whatever the decisions, development (or retrofit) occurs for all components along with sufficient testing to certify that each operates as specified. The

outputs for this phase are the prototype components of the product or system.

5. INTEGRATION operates at two levels. Components are joined together, and the product or system is tailored and tuned to the environment within which it will operate. A fully functioning product or system is the output of the integration phase.

6. TEST CONSTRUCTION performs concurrently with the solution, design, development, and integration phases to construct the acceptance tests that will certify product or system responsiveness to the user's stated objectives. Prior to the testing phase, this acceptance test package will have been verified by the user as sufficient for determining that the product or system meets the user's performance and quality standards.

7. OPERATIONAL TESTING provides the major certification that the product or system is responsive to the user's stated objectives. This phase will involve detection and correction of problems, and perhaps modifications in one or more components. Testing may recur in order to gain certification. The outputs for this phase are an operational product or system, and acceptance by the user.

8. INSTALLATION introduces and integrates the product or system into the user's environment. This phase may include parallel operation with an existing product or system, and formal phase-over of control.

9. MAINTENANCE is included in the systems approach since in a sense development continues throughout the life cycle of the product or system. Detecting and correcting errors will of course be handled. More importantly, objectives and requirements change, the environment changes, and technologies change. The configuration management characteristics of the product or system will provide for an analysis

of these changes, for the development of a new configuration, and for its installation. The maintenance process follows the same lock-step approach described in the preceding eight phases.

The attached diagram illustrates the major attributes of the systems approach through the organization and interactions of the phases. The hierarchical organization shows the overall dependence of all phases on the user's objectives. Interdependency is expressed both by the product-to-phase arrows which illustrate the lock-step approach, and by the bi-directional attribute of the arrows which demonstrates the iteration that is often necessary between phases. Organic development permeates the organization but is most forcefully expressed by the separate solution and integration phases, both of which result in total images of the product or system. Configuration management is expressed by the bi-directional arrow from maintenance to objectives and requirements, and thereby back into the developmental cycle.

Extended study of and practice in the use of this process by various industries and enterprises have resulted in an extensive philosophy of development with useful principles, guidelines, and techniques for ensuring successful results. For each product or system undertaken, however, considerable adaptation is required to fit the general process to specific objectives operating under unique conditions. The workplan for constructing the Field Implementation Plan for the Planned Variations Study is an example of the systems approach adapted to the development of a specific product.

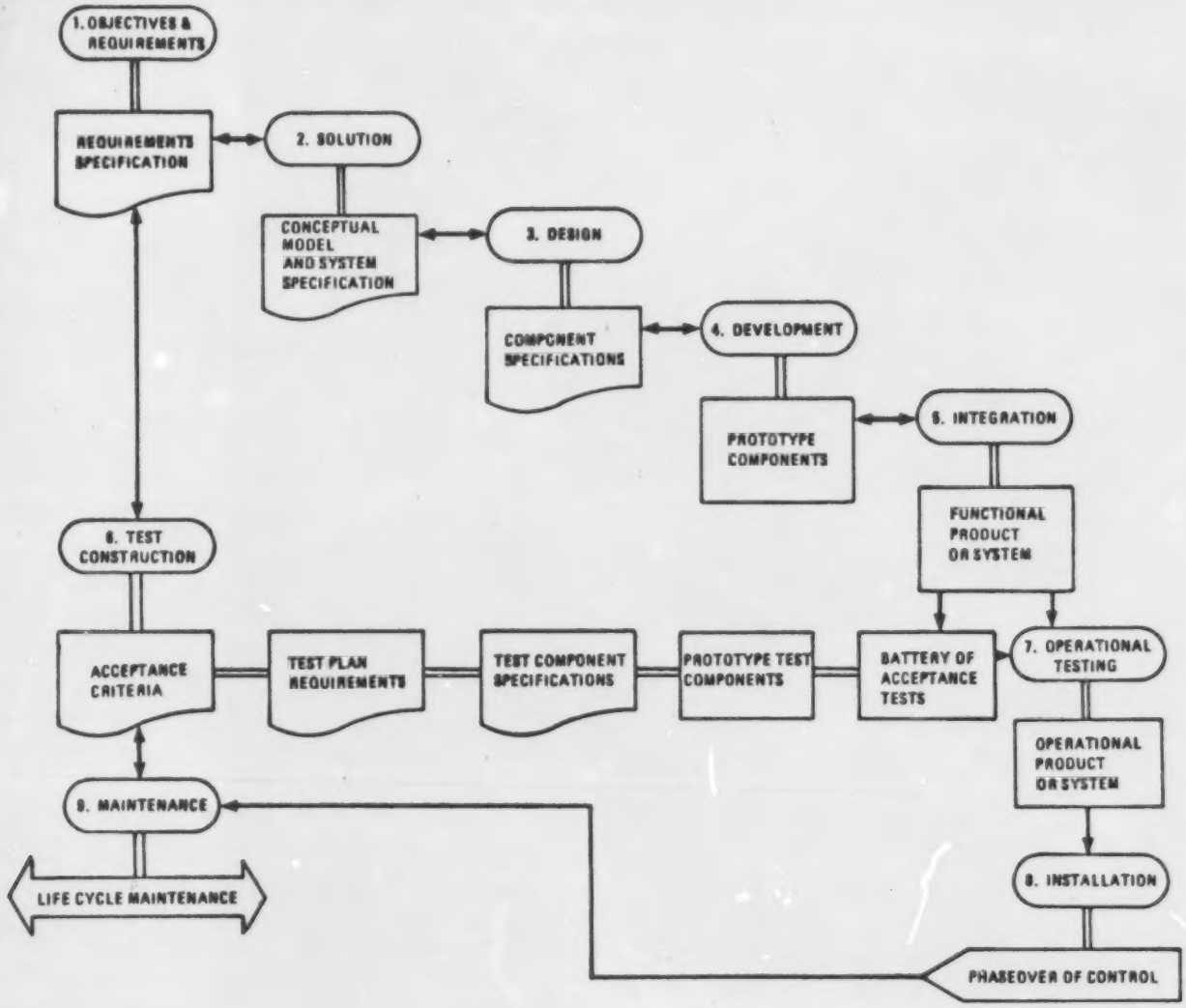


Figure 4. Systems Approach for Developing Products and Systems

WORKPLAN FOR DESIGNING THE FIELD IMPLEMENTATION PLAN

The workplan for designing the Field Implementation Plan began with an analysis of the RFP. Actually this analysis was the first step in the objectives and requirements phase of the systems approach. This initial analysis resulted in the development of the proposal. Feedback from USOE in terms of proposal questions and oral briefings provided verification of the validity of the initial statement of objectives and requirements. An additional product of the analysis and proposal was the basic workplan for designing the FIP. This workplan consisted of six tasks that were compatible with the system approach described above. A thorough subtask analysis refined and validated the approach. A correlation of these tasks with the generic systems approach follows.

TASK 1: REVIEW AND ANALYZE RESEARCH ON SIMILAR EXPERIMENTS

This task was a continuation of the objectives and requirements phase begun during the analysis of the RFP. The output incorporated USOE's objectives and requirements with implementation experiences from the project staff and from similar experiments.

TASK 2: DESIGN SYSTEM FRAMEWORK

Designing the system framework was the solution phase of the systems approach resulting in a conceptual model of the FIP that was feasible and responsive to USOE's objectives and system requirements.

TASK 3: SPECIFY FIELD IMPLEMENTATION PLAN COMPONENTS AND PRODUCTS

This is the design phase of the development process. Since the product for this first contract year was the plan or blueprint from which the Field Implementation System would be built, the outputs from this phase were descriptions of component solutions and critical performance attributes. These outputs provide the instructions and guidelines for building the components in the second contract year.

TASK 4: DESCRIBE PROTOTYPE INFORMATION (and)

TASK 5: PREPARE DRAFT FIELD IMPLEMENTATION PLAN

For this planning product, these tasks represent the development and integration phases of the systems approach. Development here meant to group and structure the components for the Summative Evaluation and then for the Formative Evaluation, an activity that not only assured internal compatibility among components but also delineated the differences between the two evaluation periods. The integration phase was accomplished by using the PSE Intervention Program to describe the FIP along a realistic time line, thereby "integrating" the plan with its intended environment. The product of these tasks was the draft Field Implementation Plan which was to be reviewed by USOE.

USOE REVIEW OF DRAFT FIELD IMPLEMENTATION PLAN

Although this was not defined as a separate task, this activity which was to occur between Tasks 5 and 6 represents the testing phase of the system approach. The acceptance of the FIP with comments and suggestions was to be the output of this task.

TASK 6: PREPARE FINAL STUDY DESIGN

The final plan was to be produced during this task by incorporating USOE's comments and suggestions, as well as those from the Project Staff. This task is the equivalent of the installation phase of the systems approach.

PROBLEMS AND SOLUTIONS

Because of the special character of the Planned Variations Study, designing the Field Implementation Plan for it involved the detection and solution of certain unique problems. In order to provide insights and guidelines for engaging in similar field experiments, this chapter of the Field Implementation Plan report describes the major problems encountered during production and discusses solutions and potential solutions that were devised to overcome them.

Two kinds of problems are discussed. Implementation problems are concerned with activities within the plan and assume impending difficulties during implementation. Production problems deal with difficulties occurring during the construction of the plan itself.

Each of the six problems is described below along with proposed or implemented solutions.

IMPLEMENTATION PROBLEMS

AWARDS PROCESS

Problem

Institutions that were to participate in the Planned Variations Study were to be selected through a regular federal competition. The implications of that decision are that all eligible institutions could submit proposals in response to one or more RFPs, and that selection would be based solely upon the selection criteria and process described in the RFPs. Three problems could result from this method of selecting sites for the study.

1. An unacceptable burden could be experienced by institutions competing for the study since each RFP in the formative competition could result in only two awards, and each RFP in the summative competition could result in only six awards.
2. An open competition could result in tie votes among many sites for both the formative and summative competitions. This could force random or subjective selections.
3. Unqualified use of any selection process could result in less than ideal participating institutions for the study.

Solution

An earlier proposal allowing these sites to be selected by SDC under subcontracting arrangements could resolve these problems. If this solution were not possible, a two-stage screening of candidates could be useful in reducing burden and in selecting satisfactory sites. Since it was determined that a national survey would be necessary to specify most of the selection criteria, perhaps this activity could be combined with the "Information Survey" concept described in the Formative Awards Process Design dated April 28, 1977. In effect, the survey of institutional characteristics could be used for an initial screening of qualified institutions. RFPs would then be sent only to those surviving the first cut. Fewer proposals from the most qualified candidates would reduce burden, provide less chance for tie votes, and would enhance the selection of excellent study participants.

RETENTION AND COOPERATION OF CONTROL STUDENTS

Problem

The need for control students for the PSE study design brings with it two potential problems:

1. Control students may leave the institution either by transferring or by dropping out.
2. Control students may not cooperate in the testing and other data collection activities.

While these can be problems with treatment students, it has been assumed that academic as well as financial incentives will be sufficient to induce retention and cooperation. (This assumption also needs verification.)

Solution

The goal is to reach an acceptable level of retention and cooperation of control students during the Summative Evaluation. The kinds and sizes of incentives provided to students should be evaluated during the Formative Evaluation and modified if necessary for the Summative Evaluation. To accomplish this, extraordinary data regarding retention and cooperation should be collected from all participating students, but most especially from control students. This data collection activity should include follow ups for those that leave or become uncooperative.

It seems that a major retention incentive would be sufficient financial aid for remaining in college. The SSDS regulation requiring that all disadvantaged students selected for the program be guaranteed one or two years of financial aid by the institution should be imposed for control students as well as for treatment students. Control students would then be assured of an education and have available to them the regular compensatory/remedial programs of the institution. The only difference between these students and their treatment counterparts would be the latter's participation in the Inter-

vention Program. Cooperation in the data collection activities could be promoted by providing financial incentives directly out of program funds. Again, the size of that monetary incentive would have to be tested during the Formative Evaluation.

PROJECT SUPPORT BIAS

Problem

Comparison sites during the Summative Evaluation will be regular SSDS projects. During implementation, these projects have the right to support services from USOE. There is a potential problem insofar as these projects may receive extraordinary attention from USOE which may enhance their performance and thereby bias the study evaluations. A similar problem can be foreseen in the support given to treatment sites by SDC. This is not to suggest that there would be a conscious effort to manipulate the study. It would be only natural, knowing that these sites are receiving attention, to exhibit extra care in providing support services.

Solution

The ramifications of support bias need not necessarily be significant; or if significant, may not be precisely measurable. These effects could be likened to the fidelity achieved by the Project Director in adhering to the spirit and letter of the Intervention Program. How much deviation is tolerable, on the one hand, and how much support bias, on the other hand, could be difficult to factor into the evaluations. Perhaps support bias could be used as a descriptive variable much as fidelity is intended to be used. In any case, three solutions to the potential for support bias have been devised.

For these solutions, it is necessary that both USOE and SDC codify the degree and kinds of support available to the comparison and treatment sites respectively. These ground rules must be accomplished prior to the Summative Evaluation. However, since SDC will be testing the ground rules for support during the Formative Evaluation, perhaps USOE could do the same using regular SSDS projects. Furthermore, since the support ground rules SDC will develop for the treatment sites are intended to be used by USOE subsequent to the study, it is very possible that USOE and SDC could formulate a single set of ground rules for use with both kinds of projects.

The first alternative solution for implementing these ground rules for the Summative Evaluation would involve simulation. An isolable SDC team would be formed to simulate USOE Project Officers (P.O.). This team would be composed of Comparison P.O.s and Treatment P.O.s and would provide all support to study projects following the ground rules USOE and SDC had formulated.

If this seems unduly restrictive considering the potential impact of support bias, USOE and SDC could each support their own sites using their own published ground rules.

A final solution, and perhaps the most practical considering the ultimate objectives for the Intervention Programs, is to allow USOE to support all sites using a single set of ground rules.

For all of the above solutions, support logs should be maintained by all parties: Project Staffs, USOE, and/or SDC. Periodic monitoring of these logs by SDC could provide the data needed to assess the presence and level of support bias.

FIELD DATA COLLECTION

Problem

Data collection activities for the Planned Variations Study have four complicating characteristics:

1. Certain collection cycles must be accomplished in concentrated time periods. An example of this is the pretest cycle (C-1) which is planned for a three-week period.

2. The relatively small number of participating sites and students adds considerable importance to the collection of all data. This could require extensive make up exams and rescheduled interviews.

3. Certain categories of data that are relevant to the study may only be defined through observations and interviews. This may require numerous return visits to each of the sites.

4. For planning purposes, it has been assumed that the eighteen sites participating in the Summative Evaluation will be distributed throughout the United States.

The initial workplan had already stipulated the need for data collectors to supplement the Study Staff. Hiring supplemental data collectors on an as-need basis in Santa Monica may involve unacceptable lead times for make ups, follow ups, and newly defined collection cycles. Further, the extensive travel would be expensive and logistically difficult.

Solution

A feasible solution has been devised that would involve a network of data collectors who reside near the institutions participating in the study. The plan is to employ these data collectors on an as-needed basis. In order to provide a knowledgeable continuity for the data collection activities, a Senior Data Collector will be acquired at each participating site. Besides functioning as a field data collector, the Senior Data Collector will distribute, collect, and quality control the instruments, hire and train additional data collectors

as needed, and perform coordination duties better handled locally, such as scheduling make-up tests. The position of Senior Data Collector will be defined as part-time employment rather than temporary. Although all field data collectors will be hired with the understanding that they will be called upon at numerous times during the academic year, sufficient additional incentives will be provided to the Senior Data Collector to ensure that the necessary continuity is achieved.

During the period between site selection and the beginning of the academic year, SDC will hire a Senior Data Collector and three field data collectors at each participating location. A data collection workshop will be conducted in Santa Monica prior to the beginning of each academic year for field data collectors, including Seniors. The topics for this one-week workshop will include:

1. PVS Overview
2. Description of the Formative (Summative) Evaluation
3. Description of Data Collection Cycles
4. Classroom Administration of Tests
5. Interview Protocols
6. Observation Protocols
7. Quality Control of Instruments, Data, and Associated Materials

A Data Collection User Manual will be distributed for use in the workshop. This manual also will be used during all data collection cycles as the authoritative guide for the collection, quality control, and submission of all required data.

Field data collectors will also be called upon to collect certain kinds of process data relating specifically to the Intervention Program being implemented at their local site. To provide an in-depth knowledge of the Intervention Program and to promote the kind of knowledgeable continuity that results in the collection of comprehensive, valuable data, the Senior Data

Collector will be required to attend the Intervention Program Workshop provided to the Project Staff at each participating site. In this way, the Senior Data Collector will gain a practical knowledge of the Intervention Program being implemented at the local institution.

PRODUCTION PROBLEMS

SCOPE OF FIELD IMPLEMENTATION PLAN

Problem

The Planned Variations Study has a dual role during implementation. It has the normal implementation role common in evaluations that involves securing the sample and collecting the data. However, it also is concerned with implementing Intervention Programs in a particular, highly disciplined manner. This dual role caused problems in planning and development. Within the SDC study staff, planning for and developing these implementations fell naturally into two separate groups, each operating simultaneously. The model development group was building the Implementation Program specifications at the same time the field operations group was building the Field Implementation Plan. In order for the scope of the Field Implementation Plan to include both roles, it would have been necessary for field operations to attain an in-depth knowledge of the Intervention Programs prior to their full specification.

Solution

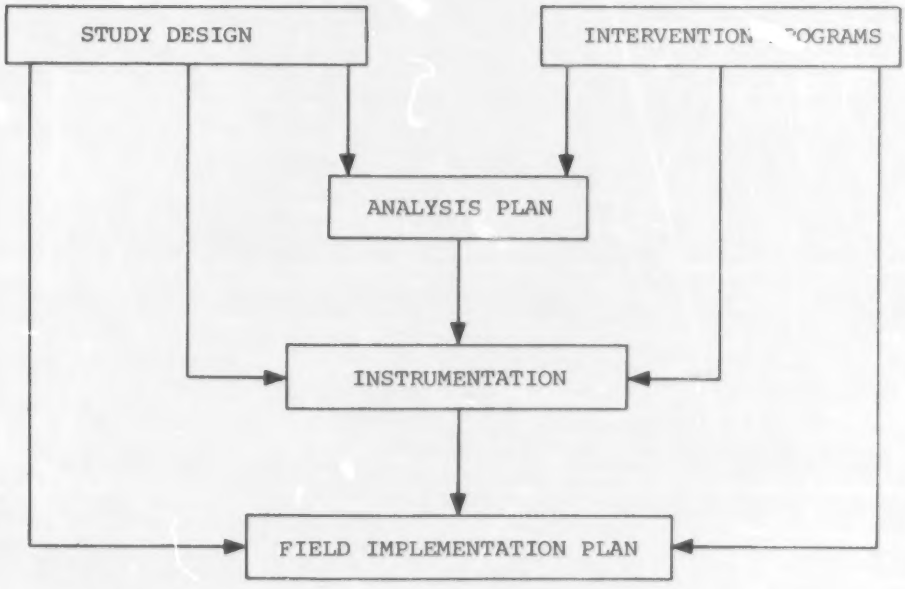
The solution that was devised defined the scope of the Field Implementation Plan and prototype system as including all aspects of the implementation except for those activities relating to the academic implementation of each of the Intervention Programs. Control over academic implementation would be innovated and specified by the model developers for each of the Intervention Programs. That control module would be specified throughout the program documentation and would be integrated and presented as the Project Management component of the program. Administrative support for implementation, including activities common to all Intervention Programs, would be innovated by the field operations group and specified as the Project Administration component of the Field Implementation Plan. During the integration phase of development, the Project Administration component of the Field Implementation System would be combined with the Project Management component of each Intervention Program. Along with the Field Test Initiation and Data Collection components, the Field Implementation System could then accomplish its dual role in the study.

CONCURRENT PRODUCTION

Problem

The RFP for the Planned Variations Study required that the designs of all components be delivered to USOE simultaneously. These components included the Study Design, Intervention Program Specifications, Analysis Plan, Instrumentation, and Field Implementation Plan. A potential problem results from this approach since much of the content of the Field Implementation Plan derives from the designs of the other components. The following diagram illustrates the dependencies among the components of the field experiment.

PRODUCTION FLOW



Field operations had been able to produce a system framework and conceptual model of the Field Implementation Plan. However, the specific detail required for specifying and producing the FIP was often not available when called for by the workplan. A subset of the kinds and levels of information required from the other components is attached (see Appendix) as an example of the interface requirements distributed to the other groups on February 22, 1977. These information requirements were still relatively gross but were intended to provide sufficient detail to allow for a continuation of the production effort for the FIP. Much of this information was not available due to the concurrent design schedule that was in effect. The topics from which this information could be derived were being discussed and negotiated between USOE and SDC between February and August. Dependent components such as the Field Implementation Plan were required to wait for their information until the independent components had been designed and concurred upon.

Solution

The solution to this problem requires a sequential rather than a concurrent production schedule. The hierarchical attribute in the design of a field experiment is the key to sequential production and must be accounted for in the overall planning by both the customer and the contractor. Specifically, in the case of the FIP, it would seem wise to schedule its dependent deliverables later to account for the dependency factor. Field operations requires at least that draft designs for all other components be produced and concurred upon.

This sequential production of study components could have its own impact near to the end of the developmental cycle. It seems to require that all design and development plans be backed up and compressed so that the only component to be produced near the end of the cycle is the Field Implementation Plan. This is not the case. It is not so much a compression that must occur but a sensitivity to priorities that takes into account the hierarchical dependencies among the components. Of all the activities that can be performed in the production of each component, care should be exercised that those activities upon which other components depend be scheduled first, and that the customer reflect these priorities in its required schedule for deliverables.

The impact of the sequential production of components lessens after all components have been specified and concurred upon. Development can then occur for all components almost concurrently. During the integration of components, final modifications and refinements can be made that will ensure overall compatibility.

Finally, there is the question of what field operations is to do while waiting for the other components to be designed. The activity in the Field Implementation Plan needing an obvious first priority is the awards process. The lead time for this activity is so great that it could be considered a separate component. The selection of participating institutions for the Planned Variations Study had to begin implementation a full year earlier than all other activities. In effect, while all other components were in design, the awards process had to be designed and developed for implementation during the second contract year.

It seems clear then that field operations could have concentrated almost exclusively on the design and development of the awards process in that first year. With active support and participation from USOE in the design of an acceptable approach and in securing required OMB clearances, and from the other SDC groups in providing necessary information from their components, the design and production of the awards process could have been accomplished within the first contract year of the study.

CONCLUSION

The range of implementation problems that can be detected during production is limited because it is predictive. Only when experiences from implementing similar field experiments can be applied to the current experiment is the developer confident that his solutions will be effective. There are, however, two factors that can mitigate the potential impact of undetected implementation problems. First, the plan can be tested. The Planned Variations Study allows for this by planning for a Formative Evaluation period during which detected implementation problems can be corrected. The second factor involves the construction of a flexible plan and system, one that allows for refinements during implementation on a near real-time basis. The Field Implementation Plan was not only produced using systems methodology but was designed as a system to provide for on-going maintenance throughtout its life cycle.

APPENDIX

CONCURRENT PRODUCTION

ACTION REQUIRED MEMORANDUM

DATE: February 22, 1977
MEMO NO.:

TO: Chuck Kenoyer, Study Design and Evaluation Design
Ralph Melaragno, Model Development
Gary Duck, Instrumentation

FROM: John Shiban, Field Operations

SUBJECT: INTERFACE REQUIREMENTS FOR DESIGN OF THE FIELD IMPLEMENTATION SYSTEM

On the FIP Development Schedule recently distributed, Activity 2-3, COLLECT FIS INTERFACE REQUIREMENTS, has been scheduled to be accomplished between March 1 and March 18, 1977. The objective for this Activity is to collect sufficient design decision information to allow me to proceed with the design of the Field Implementation System. Inputs to this activity must come from Study Design, Model Development, Instrumentation, and Evaluation Design.

There are six components in the Field Implementation System:

- Monitoring
- Data Collection
- Communications
- Installation
- Workshop for Study Participants
- Awards Process

The six components have been ordered in this way because design decisions in the earlier components structure the later components. Most of the components have sub-components or elements. An element is an isolable activity within a component having its own purpose, procedure, and product. The interface requirements have been defined by element, where isolable elements exist within a component.

A single format has been used for all of the following sections:

- The subject has been stated as an Element, if present, or as the Component.

- The ASSUMPTIONS lists the key descriptors of the element or component as currently planned.

  - Whenever it says "Illustrated in System Framework", it refers to the two 18" by 22" charts I distributed illustrating the periodic and on-going activities of the Field Implementation System.

  - Whenever it states that the attributes are attached, it refers to the immediately following description of an element or component taken from my working papers on the FIS System Framework. Accepting the assumptions implies the acceptance of these essential attributes as well.

- The next four paragraphs are introduced with each of the four design areas from which interface requirements are to be collected.

  - All requirements are stated as questions. The answer may be a simple "yes" or "no" or may require significant detail.

Let me emphasize that I do not expect that anyone would be prepared at this point to provide comprehensive and detailed specifications. I will have need of those details as they are available in order to refine the Field Implementation System specifications. What I need now are decisions regarding categories and types and strategies; performance attributes that would result from a conceptualization of solutions in your areas. I have therefore framed my current requirements for conceptual responses rather than for the specific and detailed responses I will need and use from your final products.

I would like to arrange for an initial work session at which we can discuss these interface requirements. At that point, we can decide upon the best approach to collecting what I need to continue with my design work.

John R. Shiban

JRS:jh

J. Shiban
2/21/77

FIS INTERFACE REQUIREMENTS

COMPONENT: MONITORING

ELEMENT: MILESTONE REVIEW

ASSUMPTIONS

- PURPOSE: To assess the progress and integrity of program package implementations
- AGENTS: SDC Project Staff, Project Director and Staff
- FREQUENCY: Quarterly
- REVIEW SCHEDULE ILLUSTRATED IN SYSTEM FRAMEWORK
- TREATMENT SITES ONLY
- EXISTING BASELINE DESCRIPTION FOR ALL PROGRAM PACKAGES
- FORMATIVE AND SUMMATIVE
- TWO SESSIONS, SEE SYSTEM FRAMEWORK FOR DETAILED AGENDA (see attached)

STUDY DESIGN: N/A

MODEL DEVELOPMENT

ACCEPT ABOVE ASSUMPTIONS?

PROGRAM PACKAGE ASSESSMENT CRITERIA?

ACCEPTABLE MINIMUM PRECISION FOR RECORDING CHANGES TO BASELINE?

INSTRUMENTATION

FORMAT AND PROCEDURES FOR MILESTONE REVIEW?

EVALUATION DESIGN

ACCEPT ABOVE ASSUMPTIONS?

ACCEPTABLE MINIMUM PRECISION FOR RECEIVING CHANGES TO BASELINE?

J. Shiban
2/21/77

FIS INTERFACE REQUIREMENTS

COMPONENT: MONITORING

ELEMENT: PROCESS DATA COLLECTION PROCEDURES

ASSUMPTIONS

- PURPOSE: To maintain process data files for PVS
- AGENT: Field operations
- FREQUENCY: On-going
- TREATMENT SITES ONLY
- FORMATIVE AND SUMMATIVE
- ATTRIBUTES IN SYSTEM FRAMEWORK (see attached)
- MONITORING SCHEDULE ILLUSTRATED IN SYSTEM FRAMEWORK

STUDY DESIGN: N/A

MODEL DEVELOPMENT

ACCEPT ABOVE ASSUMPTIONS?

QUALITY CONTROL REQUIREMENTS?

STORAGE REQUIREMENTS?

MAINTENANCE REQUIREMENTS?

INSTRUMENTATION

QUALITY CONTROL REQUIREMENTS?

EVALUATION DESIGN

ACCEPT ABOVE ASSUMPTIONS?

QUALITY CONTROL REQUIREMENTS?

STORAGE REQUIREMENTS?

MAINTENANCE REQUIREMENTS?

J. Shiban
2/21/77

FIS INTERFACE REQUIREMENTS

COMPONENT: AWARDS PROCESS

ASSUMPTIONS

- PURPOSE: To select institutions appropriate to the study design
- AGENTS: SDC Project Staff, USOE
- FREQUENCY: Prior to formative year, prior to summative period
- FORMATIVE: Four treatment sites, one for each model;
  Twelve comparison sites, three per block in which a treatment site is selected;
  Three year contract: one year developmental
  two years operational
- SUMMATIVE: Twelve treatment sites, one for each open model/block;
  Twelve comparison sites, three per open block;
  Two year operational contract
- MODELS: Two for secondary education, two for post-secondary education

STUDY DESIGN

ACCEPT ABOVE ASSUMPTIONS?

BLOCKING STRATEGY?

BLOCKING CATEGORIES, TYPES OF INSTITUTIONAL CHARACTERISTICS? ENVIRONMENTAL CHARACTERISTICS? DEMOGRAPHIC CHARACTERISTICS? ECONOMIC CHARACTERISTICS? DISADVANTAGEMENT CHARACTERISTICS?

(Cont'd)

J. Shiban
2/21/77

AWARDS PROCESS (Continued)

MODEL DEVELOPMENT

ACCEPT ABOVE ASSUMPTIONS?

PER MODEL -

DURATION, ACADEMIC YEAR? FULL YEAR?

UNIT PHASING, ANNUAL? SEMESTER? QUARTER?

SPECIAL INSTITUTIONAL CHARACTERISTICS? SIZE? PERSONNEL? FACILITIES?

EQUIPMENT? CURRICULUM? TWO YEAR? FOUR YEAR? POST-GRADUATE?

SELECTION METHODOLOGY?

SELECTION CRITERIA?

INSTRUMENTATION: N/A

EVALUATION DESIGN

ACCEPT ABOVE ASSUMPTIONS?